



# Mission Patches



## OBJECTIVES:

1. Students will learn about the progression of patches from medieval times to current space patches.
2. Students will understand purposes of patches.
3. Students will identify space patches and learn about patch symbolism.
4. Students will use analysis and identification skills to match patches with descriptions.
5. Students will use patch information to create their own mission patch.

## MATERIALS:

1. Knight wardrobe (plastic sword, shield with different crests, face and body covering)
2. Background information
3. Patch transparencies
4. Laminated color patches for Card Match Activity
5. Laminated patch explanations for Card Match Activity
6. Paper
7. Markers
8. Mission Patch Slide Show

## PROCEDURES:

### 1. Focus:

1. Have two students pretend that they are medieval knights.
2. Tell them to act as though they are in battle. (Do not reveal whether they are allies or enemies. Let them decide what to do.)
3. After one of them has been defeated and preformed the dramatic death scene, ask them how they knew that they were supposed to fight each other. (because they were not told that they were enemies- they could have gone after the others in the room)
4. Discuss how medieval knights knew who was their friend or enemy during battle.

### 2. Back ground information:

#### Progression of Patches:

1. Because medieval knights were completely covered with armor, they used the symbols on their shields to identify one another. The crests identified the family or group to whom they belonged.
2. Crests on the shields eventually evolved into embroidered emblems that were placed on the clothing of the time.
3. Embroidery is one of the earliest art forms. It has even been found in Egyptian tombs and Mayan burial sites.



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4. The military call patches insignias. Europeans and Canadians call them crests. The term "patch" came about during the 1960's as emblems were applied to clothing to cover holes. Also, in the 1960's, patches were worn as a fashion trend, as well as to identify or promote beliefs or organizations.
5. Today, patches continue to be worn for several reasons.

## Purposes of Patches:

1. As in the past, patches are used for fashion and identification purposes.
2. Patches are used in the military for unit identification.
3. They are durable, lightweight, easily wearable, and are cost efficient.
4. They promote team thinking.

## How patches are made for the space program:

1. All official space patches use Swiss embroidery.
2. Astronauts of a particular mission work together to design emblems to represent their mission. They can choose to get help from design artists.
3. After a design is finalized, the embroidery firm prepares samples to be approved by NASA and the crew.
4. The design has to be approved by the astronauts, the Director of the Manned Spacecraft Center, and the Associate Administrator for Manned Spaceflight at NASA Headquarters.

## Mission Patch Information: (Use with slide show)

1. NASA Original Patch: In 1959 it was the first embroidered emblem for the space agency.  
White ellipse: depicts orbital flight  
Stars: vastness of space and frontiers of exploration  
Red vector: NASA's trajectory and direction- headed toward stars
2. NASA Extended Vector: The extended vector was added during the Apollo program. Eliminated white border, vector extends beyond edges of patch, diameter is 3" instead of
3. NASA logo: In 1975 the official NASA logo was changed to the "worm", usually worn above right breast.  
Nickname: worm
4. In 1992, Administrator Dan Goldin brought NASA's meatball back from retirement to invoke memories of the one-giant-leap-for-mankind glory days of Apollo and to show that "the magic is back at NASA."
5. Mercury 3: shows capsule at height of its flight path, three black lines represent flight path from Cape Canaveral.
6. Mercury 6: shows Glenn orbiting over Earth's neighborhoods, three circles of mylar thread wrap around the Earth symbolizing Glenn's 3 orbits  
*Friendship 7* is sewn in the shape of a capsule headed for re-entry.
7. Gemini 5: first mission to have an official crew patch  
The Conestoga wagon symbolizes the pioneering nature of the early space missions. The motto "8 Days or Bust" was left off the crew's patch during the flight, but was added after its successful completion.
9. Gemini 12: The capsule points to the "XII" at the top of the patch like the hands of a clock positioned at 12:00. This represents position of Gemini 12 as the last Gemini flight. The crescent moon represents the upcoming and ultimate objective, to go to the



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moon, to be achieved in the Apollo program. The color scheme of orange and black represents the season in which Gemini 12 was scheduled to launch. Originally, Gemini 12 was scheduled to fly at Halloween. Due to delays, however, Gemini 12 did not launch until November. Jim Lovell is credited for the design, and McDonnell Aircraft is credited for the artwork.

9. Apollo 8: shape represents Apollo capsule, deep royal blue background represents deep space, red figure eight symbolizes Apollo mission number 8 and the flight path of the capsule from the Earth to the moon and return to Earth.
10. Apollo 11: Eagle represents American spirit and name of LEM. Olive branch represents peace. Original idea was to have it in eagle's mouth, but NASA thought that it looked too aggressive. Glitch- shadow on Earth should be at bottom instead of left side
11. STS 1: Two pictures of Columbia represent the first STS flight and orbital capability.
12. STS 7: background of deep blue symbolizes outer space, 7 stars represent mission number, 4 male symbols and 1 female symbol represent crew members, RMS arm in form of 7 represents mission number.
13. STS 51-L: red apple represents McAuliffe's profession, Comet Halley symbolizes the Spartan-Halley study mission objective of STS 51-L. The payload bay doors being opened represents preparation of a satellite deployment.
14. STS -107 : The central element is the micro gravity symbol,  $\mu g$ , flowing into the rays of the astronaut symbol. The sunrise represents the many experiments that are the dawn of a new era for micro gravity research on the ISS and beyond. The science conducted on this mission will have widespread benefits to life on Earth and our continued exploration of space illustrated by the Earth and stars. The constellation Columbia (the dove) was chosen to symbolize peace on Earth and the *Space Shuttle Columbia*. The seven stars also represent the crew members and honor the original astronauts who paved the way to make research in space possible.

### 3. Card Match Activity

1. Tell students there is no talking during this activity. Communication can only occur through reading and gestures.
2. Give each student a card. The card will have only a mission patch picture or a description.
3. Students will move around the room trying to find either the picture or description that matches his or her card.
4. Once they have found their match, have them sit beside one another holding their patch and description card.
5. After all have finished, allow for partners to share any interesting information about their mission patch.

### 4. Making a Mission Patch Activity

1. Have students work individually or in groups to design a mission patch.  
Mission patch ideas: individual, family, class, school, field day



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## 5. Closure

1. Discuss what student's learned from this lesson. Have the students discuss why we use patches and their importance both in the past and present.
2. Allow students to share their results from activity one and/or two.

## 6. Extension

1. From activity one, have student pairs research their mission to learn more about its objectives and the results of the mission. Put reports and pictures together to make a mission book for the class.
2. What percentage of the Apollo mission patches do not have the astronaut names sewn on them?

## References:

\*Kaplan, Judith, and Robert Muniz. *Space Patches From Mercury to the Space Shuttle*. New York: Sterling Publishing Co., Inc., 1986.

\*This book is out of print; however, some libraries have it.

Lattimer, Dick. *"All We Did Was Fly To The Moon."* Gainesville: The Whispering Eagle Press, \_\_\_\_\_.

This is a pictorial site for all NASA mission patches from the first Mercury mission to the latest Shuttle missions.

[http://history.nasa.gov/mission\\_patches.html](http://history.nasa.gov/mission_patches.html)

These sites provide an archive of information for NASA's Mercury, Gemini, and Apollo Projects.

<http://www-pao.ksc.nasa.gov/history/mercury/mercury.htm>

<http://www-pao.ksc.nasa.gov/history/gemini/gemini.htm>

<http://www-pao.ksc.nasa.gov/history/apollo/apollo.htm>

This site gives a list of STS missions along with patch, mission number, crew, and highlights.

<http://www.nasa.gov/centers/kennedy/shuttleoperations/archives/2005.html>

This site lists years. Click on the year to get selected mission highlights. Then, click on the mission number to get information about the mission.

<http://www.spaceflight.nasa.gov/shuttle/archives/index.html>

## December 1982

**STS-6 Insignia** - This is the official insignia for Space Shuttle mission STS-6. The crewmembers for this mission are Astronauts Paul J. Weitz, commander; Karol J. Bobko, pilot; F. Story Musgrave, mission specialist; and Donald H. Peterson, mission specialist. The sixth Space Shuttle flight is represented by the hexagonal shape of the insignia and the six stars, in the portrayed constellation Virgo. The sign of Virgo is also symbolic of the first flight of the Space Shuttle Challenger. Depicted above the spacecraft's open cargo bay is the combined inertial Upper Stage (IUS) and a Tracking and Data Relay Satellite. This is the first Shuttle flight of the IUS rocket, which will carry the first TDRS to a geosynchronous orbit of 24,000 statute miles.

## 29 APRIL 1983

**STS-8 INSIGNIA** --- The night launch of Challenger heading toward its third earth-orbital mission is featured in the official insignia for STS-8. The eighth flight of the United States Space Transportation System is represented by eight stars of the constellation Aquila, "The Eagle," Astronauts Richard H. Truly, commander; Daniel C. Brandenstein, pilot; Dale A. Gardner, Guion S. Bluford, and William E. Thornton--all mission specialists--have their surnames on the border of the insignia.

**STS-9 CREW PATCH** - This is the official insignia for STS-9, the major payload of which is Spacelab 1, depicted in the cargo bay of the Columbia. The nine stars and the path of the orbiter tell the flight's numerical designation in the Space Transportation System's mission sequence. Astronaut John N. Young is crew commander, Brewster N. Shaw, Jr., pilot. NASA Astronauts Owen K. Garriott and Robert A. Parker are mission specialists. Byron K. Lichtenberg of the Massachusetts Institute of Technology and Ulf Merbold of the Republic of West Germany are the Spacelab 1 payload specialists. Launch has been set for late 1983. Merbold is a physicist representing the European Space Agency (ESA).

## 15 JANUARY 1984

**STS-41-C CREW INSIGNIA** --- The patch to be worn by the five members of NASA's 41-C space mission tells the story of the flight. It features a helmet visor of an astronaut performing an extravehicular activity. In the visor are reflected the sun's rays, the Challenger and its remote manipulator system (RMS) deploying the long duration exposure facility (LDEF), the Earth and blue sky, and another astronaut working at the damaged Solar Maximum Satellite (SMS). The scene is encircled by the surnames of the crewmembers.

## OCTOBER 1989

**STS-31 CREW PATCH** - The mission insignia for NASA's STS-31 mission features the Hubble Space Telescope (HST) in its observing configuration against a background of the universe it will study. The cosmos includes a stylistic depiction of galaxies in recognition of the contribution made by Sir Edwin Hubble to our understanding of the nature of galaxies and the expansion of the universe. The STS-31 crew points out that it is in honor of Hubble's work "that this great observatory in space bears his name." The depicted Space Shuttle trails a spectrum symbolic of both the red shift observations that were so important to Hubble's work and new information, which will be obtained with the HST. Encircling the artwork, designed by the crew, are the names of its members: Loren J. Shriver, mission commander; Charles F. Bolden, pilot, and Steven A. Hawley, Bruce McCandless II and Kathryn D. Sullivan, mission specialists.

## STS-71 CREW INSIGNIA

The STS-71 crew patch design depicts the orbiter Atlantis in the process of the first international docking mission of the Space Shuttle Atlantis with the Russian Space Station Mir. The names of the 10 astronauts and cosmonauts who will fly aboard the orbiter as shown along the outer border of the patch. The rising sun symbolizes the dawn of a new era of cooperation between the two countries. The vehicles Atlantis and Mir are shown in separate circles converging at the center of the emblem symbolizing the merger of the space programs of the two space faring nations. The flags of the United States and Russia emphasize the equal partnership of the mission. The joint program symbol at the lower center of the patch acknowledges the extensive contributions made by the Mission Control Centers (MCC) of both countries. The crew insignia was designed by aviation and space artist, Bob McCall, who also designed the crew patch for the Apollo Soyuz Test Project (ASTP) in 1975, the first international space docking mission.

## STS-95 Crew Patch

The STS-95 patch, designed by the crew, is intended to reflect the scientific, engineering, and historic elements of the mission. The Space Shuttle Discovery is shown rising over the sunlit Earth limb, representing the global benefits of the mission science and the solar science objectives of the Spartan Satellite. The bold number "7" signifies the seven members of Discovery's crew and also represents a historical link to the original seven Mercury astronauts. The STS-95 crew member John Glenn's first orbital flight is represented by the Friendship 7 capsule. The rocket plumes symbolize the three major fields of science represented by the mission payloads: microgravity material science, medical research for humans on Earth and in space, and astronomy. The NASA insignia design for Space Shuttle flights is reserved for use by the astronauts and for other official use as the NASA Administrator may authorize. Public availability has been approved only in the form of illustrations by the various news media. When and if there is any change in this policy, which we do not anticipate, it will be publicly announced.

### The STS-88 Crew Patch

The STS-88 patch commemorates the first assembly flight to carry U.S.-built hardware for constructing the International Space Station. This flight's primary task is to assemble the cornerstone of the Space Station: the Node with the Functional Cargo Block. The rising sun symbolizes the dawning of a new era of international cooperation in space and the beginning of a new program: the International Space Station. The Earth scene outlines the countries of the Station Partners: the United States, Russia, those of the European Space Agency, Japan, and Canada. Along with the Pressurized Mating Adaptors and the Functional Cargo Block, the Node is shown in the final mated configuration while berthed to the Space Shuttle during the STS-88/2A mission.

The Big Dipper Constellation points the way to the North Star, a guiding light for pioneers and explorers for generations. These stars symbolize the efforts of everyone, including all the countries involved in the design and construction of the International Space station, guiding us into the future.

### Gemini 10

The Roman numeral X embroidered in the center of the patch symbolizes the mission number. The two objects orbiting the Roman numeral are a Gemini capsule and an Agena target drone. Eventually, these two objects rendezvoused. The stars represent the twin stars, Castor and Pollux, in the Gemini constellation. The stars also represent the objective of the mission which was the twin rendezvous of the Gemini capsule with an Agena satellite.

### The STS-93 Crew Patch

The STS-93 mission patch, as designed by the five crew members. The STS-93 mission will carry the Chandra X-ray Observatory into low Earth orbit initiating its planned five-year astronomy mission. Chandra is the third of NASA's great observatories, following the Hubble Space Telescope and the Compton Gamma Ray Observatory. Chandra will provide scientists an order-of-magnitude improvement over current capabilities at X-ray wavelengths. Observations of X-ray emissions from energetic galaxies and clusters, as well as black holes, promise to greatly expand current understanding of the origin and evolution of our universe. The STS-93 patch depicts Chandra separating from the Space Shuttle Columbia after a successful deployment. A spiral galaxy is shown in the background as a possible target for Chandra observations. The two flags represent the international crew, consisting of astronauts from both the United States and France.

### Apollo 17

The navy colored background represents the reaches of deep space. The Greek god, Apollo, symbolizes NASA's third manned space program. It appears in gold to represent the golden age of space travel. Just as NASA sees man's future ahead in the exploration of stars and planets, Apollo also gazes ahead seeing Saturn and a spiral galaxy. The gold and brown colors of the moon accent the golden age theme. The eagle's wings symbolize man's first lunar landing. Like Apollo, the eagle searches for new frontiers in space. Within the eagle, the red bars, blue background, and white stars represent the U.S. flag. The three white stars also represent the crew of Apollo 17.

### STS-90 Crew Patch

The STS-90 crew patch reflects the dedication of the mission to the neurosciences, in celebration of the Decade of the Brain. The Earth is revealed through a neuron-shaped window, which symbolizes new perspectives in the understanding of nervous system development, structure and function, both here on Earth and in the microgravity environment of space.

The Orbiter Columbia is depicted with its open payload bay doors revealing the Spacelab within. An integral component of the mission, the laboratory provided by the European Space Agency signifies the strong international involvement in the mission.

The seven crew members and two alternate payload specialists, Chaiaki Mukai and Alexander Dunlap, are represented by the nine major stars of the constellation Cetus (the whale) in recognition of the International Year of the Ocean. The distant stars illustrate the far-reaching implications of the mission science to the many sponsoring agencies, helping prepare for long-duration space flight aboard the International Space Station.

### Apollo 12

The dominant blue and gold colors in the Apollo 12 mission patch represent the colors of the Navy since all three crew members were members of the Navy. The ship orbiting the moon is a Yankee Clipper, a naval ship, and symbolizes the name of the command service module. The trail behind the Clipper represents the technological achievement of space flight. The three light stars shining beyond the moon stand for the three astronauts who carried out the Apollo 12 mission. The brightest star represents C.C. Williams who was originally scheduled to be the lunar module pilot; however, he was killed in a plane crash two years prior to this mission. Alan Bean replaced Williams in the Apollo 12 mission.









